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SOUTH AUSTRALIAN SHELLS.

PART I.

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This article deals with a few families of South Australian shells. A short, specific description in simple language is given and at least one species in each genus illustrated. The authors hope, gradually, to describe other families in this simple way.

TRIPHORIDAE.

Shell elongate, sinistral, rarely dextral, sculptured with spiral keels, either plain, tuberculate, or gemmate; mouth small with a more or less recurved canal which is often tubular; outer lip notched near the suture, sometimes forming an isolated tube; operculum horny, with few spirals. Distribution, Indian Ocean, West Indies, Europe and Australasia. The South Australian species hitherto placed in *Triphora* are not congeneric and may be arranged in six different genera based upon the type of protoconch. Several species may be found in beach shell sand but some only inhabit deep water. Fossil Tertiary.

EUTRIPHORA gen. nov. Protoconch blunt, whorls rounded, first three axially plicate without spiral keels or grooves; nodular sculpture, like that seen on the spire whorls, commences on the fourth whorl of the protoconch. Type *Triphora cana* Verco.

E. CANA Verco 1909. (*Triphora*) Pl. 1. figs. 1 & 2. Tapering; apical whorls usually white, the rest light brown; first whorl with one gemmate keel, the second with two, the third with three, the last arising between the other two; sometimes the uppermost pearl row is slightly larger than the others; base flatly convex; outer lip slightly cut back towards the suture. Height 8 mm.; diam. 2.1 mm. Not common. Beachport to St. Francis Island, 35 to 110 fathoms.

E. DEXIA Verco 1909 (*Triphora*). Dextral, smaller whorls tapering, larger whorls cylindrical; white; in the larger whorls are three round, rather rugged, spiral ribs; oblique axial riblets extend between the sutures, about 16 in the penultimate whorl; spire whorls 12, not convex; body-whorl has three openings, a bent tube formed by the closure of the anterior channel, one similar at the posterior canal and projecting just below the suture; mouth complete, round, produced into a wide tube and effuse. Height 7.5 mm.; diam. 1.6 mm. Not common. Beachport to Cape Borda. 40 to 110 fathoms.

E. EPALLAXA Verco 1909 (*Triphora*). Dextral; resembles *E. dexia* in general shape and in having three well formed apertural tubes, but is distinguished by the two rows of tubercles of which the lower row is the larger. Height 7.9 mm.; diam. 1.7 mm. Uncommon. Cape Jaffa 130 fathoms.

ISOTRIPHORA gen. nov. Protoconch blunt with nodular sculpture retained to the apex. The rest of the shell beset with rows of gemmules. Type—*Triphora tasmanica* Ten. Woods, 1876.

I. TASMANICA Ten-Woods 1876 (*Triphora*). Pl. 1, figs. 3 and 4. Elongate, tapering; reddish-brown, dull; three equal gemmule rows on the larger whorls, with a brown dot between the gemmules of the lowest tier; whorls about 13, flat. Height 9; diam. 3 mm. Not uncommon. Beachport to Cape Borda, 40 to 55 fathoms.

I. LILACINA Verco 1909 (*Triphora*). Elongate, tapering; delicate lilac tint on the apex and a spiral of lilac gemmules above the suture, occasionally the lilac is replaced by white; three equal gemmule whorls on the larger whorls. Height 4 mm.; diam. 1.4 mm. Not uncommon. Beach, Gulf St. Vincent. West Coast, St. Francis Island. Dredged Beachport to St. Francis Island down to 55 fathoms.

I. NIVEA Verco 1909 (*Triphora*). Elongate, tapering; pure white; three gemmule rows on the larger whorls. Height 6 mm.; diam. 1.5 mm. Not uncommon. Beach Gulf St. Vincent. Dredged Beachport to St. Francis Island down to 110 fathoms.

I. AUREOCINCTA Verco 1910 (*Triphora*). Elongate, tapering; dark purple with a golden band in the suture and on the base. Height 4 mm.; diam. 1 mm. Uncommon. Cape Borda, 55 fathoms.

I. DISJUNCTA Verco 1909 (*Triphora*). Elongate, tapering; light-brown; three rows of beads equal in size; sutural spaces rather wide. Height 7.5 mm.; diam. 2 mm. Uncommon. Beachport to Cape Borda, 55 to 300 fathoms.

NOTOSINISTER Finlay 1926. Protoconch, whorls with a sharp median keel crossed by narrow axial threads. Type—*Triphora fascelina* Suter 1908. (New Zealand).

N. GRANIFERA Brazier 1894 (*Triphora*). Pl. 1, figs. 5 & 6. Short, thick, with straight sides; glistening translucent white, with brown squarish blotches (few or many); three spirals of closely packed beads of equal size on the larger whorls, two plain spiral keels on base; suture deep. Height 4.45 mm.; diam. 1.5 mm. Common. Beach from MacDonnell Bay to Scales Bay. Dredged Beachport to St. Francis Island down to 150 fathoms. Sometimes the lowest pearl row is the largest, and the highest, the smallest. Sydney shells are mostly dark, or light-brown.

N. INNOTABILIS Hedley 1902 (*Triphora*). Pl. 1, fig 15. Slender, narrow; brown, gemmules dull white; larger whorls with three gemmule rows, the median much the smaller; gemmules large, prominent; base with two plain spiral keels. Height 4.5 mm.; diam. 1.3 mm. Common. Beach Gulf St. Vincent and Streaky Bay.

N. MAMMILLATA Verco 1909 (*Triphora*). Shape varies, short, broad and pupaeform or long and narrow; yellowish-white, the lowest row of pearls white, beneath them a narrow line of ochre, base and protoconch ochreous; three gemmule rows on the larger whorls and four rows above the base, the lowest row usually the largest. Height 5.5 mm.; diam. 1.5 mm. Not uncommon. Beach, MacDonnell Bay to Venus Bay.

N. LATILIRATA Verco 1909 (*Triphora*). Elongate, sides straight; white; three spirals, flat, wide, nearly smooth; whorls flat, sloping; base convex with a peripheral spiral, rounded, smooth keel and a second one below, punctuated between; outer lip slightly cut back at the suture; basal canal nearly closed, recurved. Height 10.5 mm.; diam. 2.5 mm. Uncommon. Gulf St. Vincent. Dredged, Gulf St. Vincent to St. Francis Island down to 55 fathoms.

N. ARMILLATA Verco 1909 (*Triphora*). Elongate, tapering; white, but for the fifth and sixth whorls which are dark-brown, protoconch light-brown; larger whorls with three rows of gemmules of equal size, gemmules large; base flatly convex; outer lip slightly reflected, with eight nodulous spirals on its outer surface. Height 7.9 mm.; diam. 2.2 mm. Fairly Common. Beach, Gulf St. Vincent to Venus Bay.

N. FESTIVA A. Adams 1851 (*Triphora*). Pl. 1; fig. 16. Short, broad, bulging centrally; white, with brown interrupted bands, base light-brown; two equal rows of large gemmules in each whorl, interstices deeply punctuated; whorls flat; base rounded, smooth. Height 6.4 mm.; diam. 2.1 mm. Common. Beach, Gulf St. Vincent to St. Francis Island. In the larger forms a threadlet arises in the later whorls between the two spiral rows and becomes a third smaller row.

N. PFEIFFERI C. & F. 1865 (*Triphora*). Pl. 1; fig. 14. Elongate, narrow, tapering; usually glistening, pearly white, with base violet-brown, and the ledge just above the suture articulated brown and white, but it may be unicoloured, of a dark violet-brown or any intermediate tint; two spiral gemmule rows, the lower very prominent. Height 5.5 mm.; diam. 1.3 mm. Our most common species. Beach MacDonnell Bay to St. Francis Island.

N. SCITULA A. Adams 1851 (*Triphora*). Elongate, tapering; glistening white, base brown; three spiral gemmule rows in the larger whorls, the median, large, prominent, collar-like. Height 6 mm.; diam. 1.7 mm. Uncommon. Port Lincoln. Shells in the South Australian Museum conform to Adams' description, but Hedley held that *scitula* was identical with *pfeifferi* C. & F. having the supra-sutural ledge modulated so as to look like a pearl row.

N. SPINA Verco 1909 (*Triphora*). Very long and narrow; light amber tint; spirals four, slightly tuberculate with low, long nodules united by low, broad, axial ribs; adult whorls 17; outer lip crenulated by the spirals and extended spur-like towards the base; canal nearly closed at this point, curved to the left and reflected. Height 12.4 mm.; diam. 1.9 mm. Uncommon. Dredged, Beachport and Cape Jaffa, 90 to 200 fathoms.

C. CAUTOR Finlay 1926. Protoconch of three whorls, apex short, blunt, asymmetrical, second and third whorls with two heavy spiral keels, abruptly breaking into two rows of sharply defined nodules in the succeeding spire whorl. Type—*Triphora obliqua* May 1915.

C. OBLIQUA May 1915 (*Triphora*). Pl. 1; figs. 9 & 10. Very elongate, tapering; yellowish-brown; three nodular keels on larger whorls, nodules tending to form axial ribs; whorls 20, flattened, broadest at the lower suture; mouth rather square, produced behind into a tubular canal. Height 7.5 mm.; diam. 1.9 mm. Uncommon. Dredged, Cape Jaffa to Beachport, 55 to 300 fathoms

C. MACULOSA Hedley 1902 (*Triphora*). Pl. 1; fig. 13. Solid, broad, conical, bulging centrally; variegated with opaque white, buff and chocolate, usually articulated with chocolate and white beneath the suture, base chocolate, apex white; three equal rows of gemmules on the penultimate whorl and those immediately above, and four rows on the body-whorl; gemmules large, round; whorls, 10, convex; base with two plain spiral keels; posterior notch extended into a spur; basal canal short, straight. Height 6 mm.; diam. 2 mm. Common. Beach Gulf St. Vincent.

C. LABIATA A. Adams 1851 (*Triphora*). Short, broad, conical, bulging centrally; glossy; larger whorls dark chocolate persisting above as a sutural thread, the rest paling to buff; three spirals with small, close-set, ill-defined gemmules on the larger whorls; whorls 10, convex; suture deep; posterior notch deep, subcircular, basal canal short, recurved. Height 4.2 mm; diam. 1.5 mm. Not common. Beach Kingston to Venus Bay.

C. AMPULLA Hedley 1902 (*Triphora*). Narrowly conical, bulging centrally; chequered by alternate squares of white and chocolate, apex white or brown, base chocolate; three equal spirals of large gemmules on larger whorls. Height 5 mm.; diam. 1.6 mm. Uncommon. Dredged, Beachport to St. Francis Island down to 110 fathoms. This species is smaller than *C. maculosa*, larger and narrower than *N. festiva*, although colour and shape are similar.

C. REGINA Hedley 1902 (*Triphora*). Narrowly conical, bulging centrally; white, a narrow orange line along the lowest gemmule row; an orange tip to the canal; three equal rows of gemmules on the last whorl, three simple spirals on base; whorls 12; posterior notch rather deep, narrow; basal canal nearly closed reflected, notched. Height 5 mm.; diam. 1.5 mm. Uncommon. Dredged, Beachport to St. Francis Island, 35 to 150 fathoms.

C. NOVAPOSTREMA Verco 1910 (*Triphora*). Broad, conical; white; three equal gemmule rows on the larger whorls, crossed by axial lirae, about 14 in the last whorl; the third gemmule row arises in the first adult whorl, above the others; usually in this group when a third spiral arises it is between the other two. Height 3.1 mm.; diam. 1.2 mm. Uncommon. Cape Borda 55 fms. also Gulf St. Vincent.

TERETRIPHORA. Finlay 1926. Protoconch smooth, several whorled, with a flattened dome-shaped top and a strong medial groove formed by spiral keels on its later whorls. Nodular sculpture of shell obsolete, having the appearance of a reversed *Seila*. Type—*Triphora huttoni* Suter 1908. (New Zealand).

T. GEMMEGENS Verco 1909 (*Triphora*). Pl. 1; figs 7 & 8. Solid, conical, bulging centrally; whorls with three spiral keels, not gemmed, the upper two closer than the lower; whorls 8, somewhat convex, suture well marked. Height 8 mm.; diam. 2 mm. Not common. Beachport, 40 fathoms.

T. ANGASI C. & F. 1865 (*Triphora*). Solid, glossy, tapering, bulging centrally; buff, with a chocolate base and sutural band; gemmules white; four spirals on the last whorl, three on the whorls immediately above, the middle row nearer to the upper than the lower row, base with one spiral thread; whorls 13, slightly convex; suture distinct; mouth somewhat square. Height 7 mm.; diam. 2 mm. Common. Beach, Gulf St. Vincent to Scales Bay.

T. LEUCA Verco 1909 (*Triphora*). Solid, tapering; white or light-brown, others just tinted brown over a vertical extent to the spire; three gemmule rows on the larger whorls. Height 8; diam. 2 mm. Common. Beach Corney Point to Scales Bay.

T. CINEREA Hedley 1902 (*Triphora*). Narrow, conical with straight sides, base dark chocolate, spire marbled with ash and brown, or brown with ash gemmules, the ashy tint predominating; three spiral rows of faint gemmules crossed by about 21 axial riblets, base with one plain spiral cord. Height 8 mm.; diam. 2 mm. Not common. Beach Gulf St. Vincent, St. Francis Island down to 50 fathoms.

T. SPICA Verco 1909 (*Triphora*). Long, narrow, upper third elongate, conical, rest nearly cylindrical; light brown with darker axial streaks from suture to suture; three faintly nodulous spirals from the sixth whorl downwards; whorls 17. Height 9.7 mm. diam. 1.5 mm. Uncommon. Gulf St. Vincent, Cape Borda, 25-50 fathoms.

T. KESTEVENI Hedley (*Triphora*). Elongate, tapering gradually to the apex; pale pink; last whorl four, the others three smooth spiral ribs, the uppermost largest; whorls 12; interstices punctate. Height 5 mm.; diam. 1.25 mm. Neptune Island, 104 fathoms (one specimen only).

HYPOTRIPHORA gen. nov. Protoconch of $3\frac{1}{2}$ whorls; first whorl with two high, narrow, smooth keels joining at the apex to form a tongue; a third smaller, infra-sutural keel develops on the second whorl. Type—*Triphora subula* Verco 1909.

H. SUBULA Verco 1909 (*Triphora*). Pl. 1; figs. 11 & 12. Very elongate, tapering, light-horn tint; the posterior spiral darker, three spiral ribs, somewhat nodular, especially the central rib; the last six whorls have a supra-sutural smooth, thin ledge; whorls 20. Height 13 mm.; diam. 1.8 mm. Uncommon. Gulf St. Vincent. Dredged, Cape Borda 55 fathoms.

TURRITELLIDAE.

"Screw Shells." Elongate, tapering, many-whorled, spirally striated or keeled, lines of growth wavy, mouth rounded or subquadrate; outer lip thin, usually with sinus, Operculum horny, multispiral. Cosmopolitan, shallow water and deep water. Fossil Trias.

GAZAMEDA Iredale, 1924. Spire long mouth sinuate, simple operculum. Animal viviparous. Type—*T. gunnii* Reeve 1849

G. TASMANICA Reeve 1849 (*Turritella subsquamosa* Dunker 1871; *oxyacris* Tate 1897). Pl. 2; fig. 1. Attenuated, yellowish white, with faint, small, ruddy blotches; finely sculptured with two or three inconspicuous keels; whorls flattened; base angulated, flattish; mouth oval, oblique; outer lip thin, translucent, with curved, open sinus. Height 48 mm.; diam. 10 mm. Beachport to Cape Borda down to 55 fathoms.

COLPOSPIRA Donald 1900. Shorter than *Gazameda* and more sinuate, subquadrate mouth; outer lip arched obliquely backwards above a deep sinus; slightly canaliculated at base; protoconch of two smooth rounded whorls. Animal oviparous. Type—*T. runcinata* Watson 1881.

C. RUNCINATA Watson 1881 (*Turritella*). Pl. 2; fig. 2. Broadly conical; yellowish, tinged and speckled with brown and white; two moderate spiral keels, and fine, irregular, interrupted spiral threads; whorls 15, almost flat; mouth squarish; outer lip with deep sinus. Height 42 mm.; diam. 12 mm. Common, dredged. There is also a lilac-tinted variant.

C. CIRCUMLIGATA Verco 1910 (*Turritella*). Solid; pale yellow-brown tint with a broad brownish spiral over the middle of the base; four spiral cords developing from the fourth whorl, the round supra sutural cord, the strongest, projects beyond the suture; whorls 13; base flatly rounded, with five flat low spiral cords; mouth slightly effuse; outer lip simple, corrugated by the spirals; inner lip a broad glaze. Height 17 mm.; diam. 6 mm. Uncommon. Type, Beachport 110 fathoms.

C. ACCISA Watson 1881. (*Turritella higginsii* Petterd, 1884). Solid, tapering; brownish-yellow with ruddy irregular spots; two blunt spirals on the last whorl, lower one stronger; surface scored between spirals by several threads; whorls 15, almost flat; base flattish; suture sharp; outer lip expanded, with a deep, rounded, sharp sinus, thinnish, speckled. Height 40 mm.; diam. 9 mm. Beachport to Cape Borda, 40-200 fathoms.

C. MEDIOLEFFIS Verco 1910. (*Turritella*). Small, turreted, narrow; white, light-brown at the base and below the suture; upper spire whorls with an indistinct band both below and above

the suture, in the fifth whorl each band divides in two leaving the central part smooth, whence the specific name; penultimate whorl with eight unequal, low flat spirals increasing to fifteen in the body whorl and base; spirals crossed by sinuous axial striae; spire adult whorls 9, at first flat and sloping, then becoming convex and subsequently round; mouth widely effuse in front; outer lip thin, rather expanded over a minute perforation. Height 5.2 mm.; diam. 1.5 mm. Uncommon. Beachport to Neptune Islands, 40-104 fathoms.

PLATYCOLPUS Donald 1900. Distinguished from *Colpospira* by the much broader and shallower sinus; columella more nearly straight, without a backward twist; protoconch of two smooth convex whorls; operculum as *Colpospira*. Type—*T. quadratus* Donald.

P. QUADRATUS Donald 1900. (*Turritella*). Pl. 2; fig. 3. Pyramidal; light yellow, flamed with brown and spotted with dark-brown; sculpture of numerous strong spiral threads; aperture subquadrangular with a broad shallow sinus in the outer lip; inner lip spread on the body whorl; base slightly convex. Height 19 mm.; diam. 6.5 mm. Uncommon. South of Cape Wiles, 100 fathoms.

STIRACOLPUS Finlay 1926. Protoconch paucispiral of one or two whorls without a keel; sculpture of few subequal spirals and few interstitial riblets. Type—*T. symmetrica* Hutton. (New Zealand).

S. SMITHIANA Donald 1900. (*Turritella*). Small, turreted; sculpture of four strong keels, five on the body whorl and fine threads on the base between the keels; whorls 12, convex or slightly angular; base convex; mouth subquadrangle, channelled below; outer lip rather deep and widely sinuate; umbilicus closed. Height 9.5 mm.; diam. 3 mm. Cape Jaffa, Beachport, 130-200 fathoms.

S. ATKINSONI Tate & May 1900. (*Turritella*).—*T. tasmanica* Ten-Woods 1876, *T. godeffrayana* Donald 1900. Elongate turreted, white; four principal spiral keels, the interstices girdled with fine equidistant spiral striae; whorls 11, angulate; base rounded, spirally lirate; mouth quadrate, sinuous; columella white, enamelled, and well defined. Height 13 mm.; diam. 4 mm. Beachport, Cape Jaffa, 90-200 fathoms.

S. MEDIOANGULATA Verco 1910. (*Turritella*). Rather thin, turreted; yellowish-brown, lighter along the suture, the earlier whorls translucent white, tinged brownish along the angu-

lation; body whorl with round cord-like carina forming the periphery at the suture; sculpture on the spire whorls consists of spiral striae, mostly obsolete, seven in the penultimate; whorls 12, angulate; base nearly flat with numerous spiral striae; mouth hexagonal, effuse; outer lip thin, with a wide deep sinus. Height 12.9 mm.; diam. 3.6 mm. Beachport to Neptune Islands, 90-200 fathoms.

S. IREDALEI Finlay 1927. (*Turritella Clathrata* Kiener 1843). Pl. 2; fig. 4. Rather thin, turreted, light or dark purplish brown with lighter brown encircling the ribs (beach rolled specimens are almost white); two prominent equal spiral keels and 7-10 spiral striae crossed by very fine lamellar striae; whorls 17, flattish or slightly concave; base angulate with crowded growth laminae crossing a dozen spiral striae; mouth sub-quadrate; outer lip with sinus between the keels. Height 48 mm. (nearly 2 ins.). diam. 9 mm. Very common. All along the coast as far as Point Sinclair.

S. NEPTUNENSIS Verco 1910 (*Turritella*). Turreted; white; inconspicuously medially keeled, otherwise smooth; protoconch papillate, projecting, of 3 convex whorls; 9 spire whorls of which 6 are medially angulate the rest becoming quite convex with about 7 faint spiral lirae. Height 6 mm.; diam. 1.4 mm. Neptune Islands, 104 fathoms.

S. KIMBERI Verco 1908. (*Turritella*). Thin, narrow; translucent white; low spiral ribs (6 in penultimate whorl) with opaque white spiral lines between them; protoconch of 4 smooth, convex whorls; spire whorls 10, well-rounded; base convex; mouth slightly oblique, elliptical, effuse, outer lip thin, convex. Height 7.7 mm.; diam. 1.7 mm. Uncommon. Beach Pt. Willunga, dredged Backstairs Passage. *Seilaerx turritelliformis* Hedley, superficially resembles this but differs in its anterior notch.

GLYPTOZARIA Iredale 1924. Outer lip without a sinus; all the other known Australian members of the *Turritellidae* have a sinus more or less deeply marked. Type—*T. opulenta* Hedley.

G. OPULENTA Hedley 1907. (*Turritella*). Pl. 2; fig. 5. Rather solid, glossy, milk-white, irregularly marbled with pale brown; upper whorls with 2 projecting spiral keels, three spiral threads intercalated later; fine close radial riblets lattice the adult whorls with the spirals; protoconch of 2 smooth globose whorls; spire whorls 8, convex; base slightly concave with 4 faintly raised spirals; mouth ovate angled above, effuse below; outer lip sharp; columella straight, slightly thickened. Height 6 mm.; diam. 2 mm. Cape Borda, 55 fathoms.

CAECIDAE.

Shell minute, tubular, curved, with a spiral plane nucleus. Operculum horny, multispiral. Cosmopolitan. Fossil, Tertiary.

CAECUM Fleming 1824. "Blind-shell." When young discoidal, when adult decollated, tubular, cylindrical, curved; aperture round, entire; apex closed by a mammillated septum where the original spire has been lost.

C. AMPUTATUM Hedley 1893. Pl. 2; fig. 6. Subcylindrical, slightly bent, smooth, glossy, white; aperture slightly expanded; very fine lines of growth. Height 2 mm.; diam. 0.5 mm. Uncommon. Shell sand Guichen Bay.

STREBLOCERAS Carpenter 1858. Not decollated, the protoconch lying in a plane perpendicular to the adult tube.

S. CYGNICOLLIS Hedley 1894. Pl. 2; fig. 7. Minute, glossy, translucent; delicate growth rings, which later become broader and stronger; protoconch of two whorls in one plane, remainder describing half a revolution of a long drawn spiral in a plane oblique to the first; a ring-varix at one fifth of the length. Height 3.35 mm.; diam. 0.45 mm. Cape Borda, 55 fathoms.

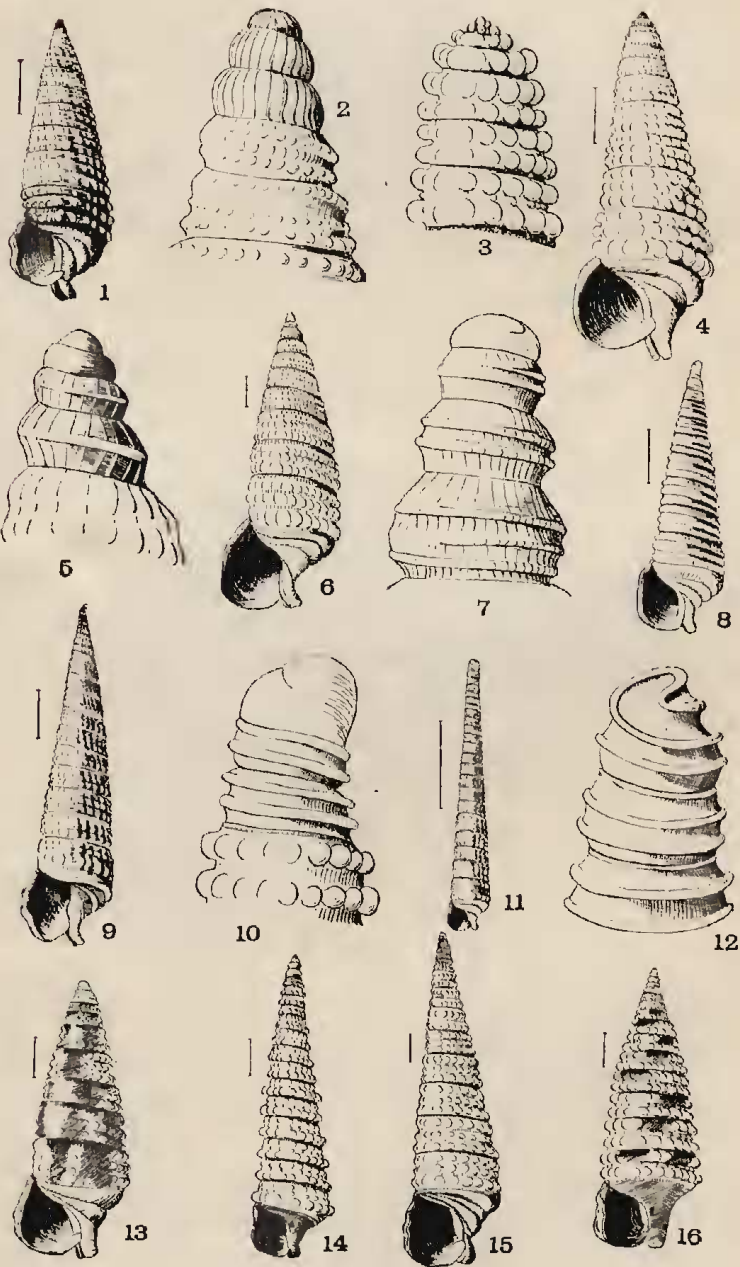
LIPPISTIDAE.

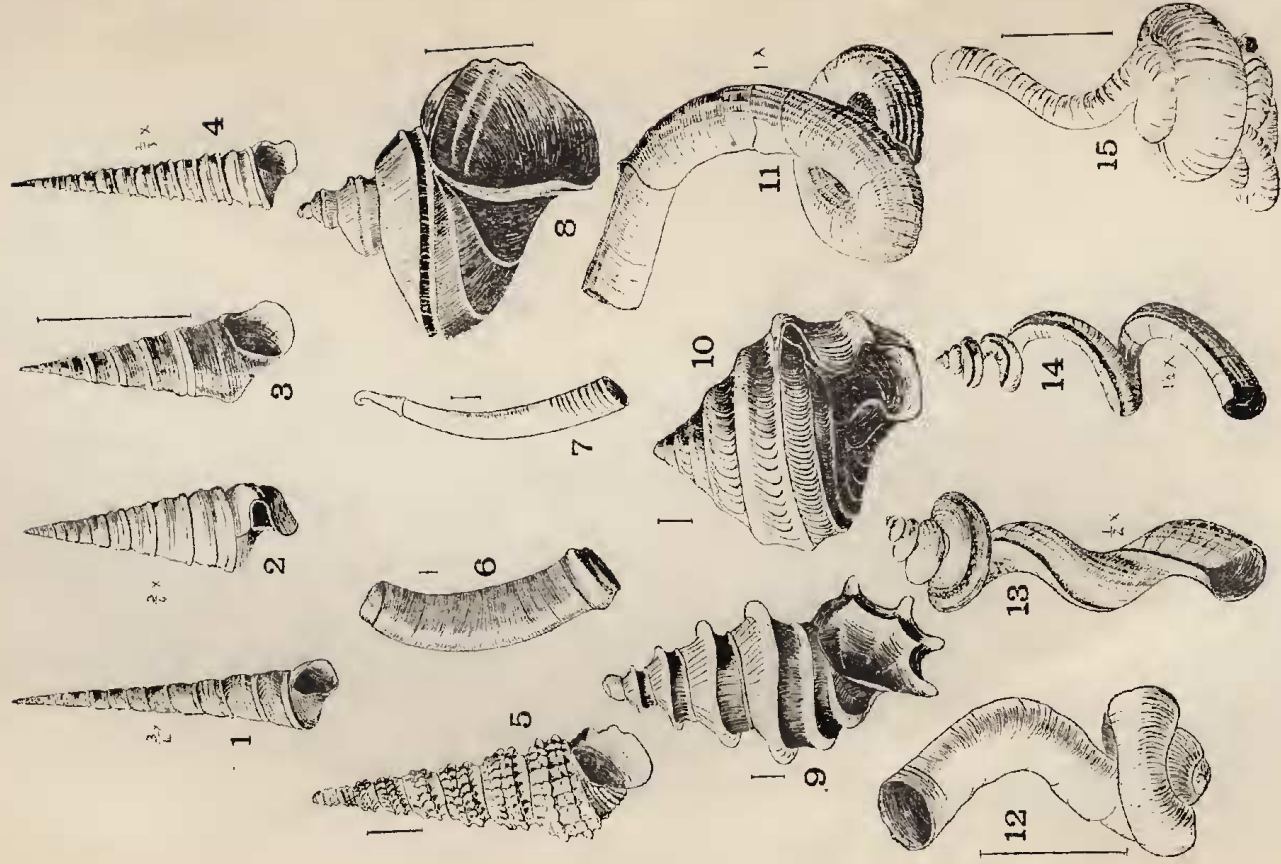
Shell thin, turbinate, keeled, periostracum fringed on the keels, umbilicated; mouth angulated or subchannelled below, lip sharp, columella obliquely truncated; operculum lamellar; nucleus external. West Indies, Japan, Philippines, Australasia, South Africa.

LIPPISTES Montfort 1810. Turbinate, dilated below; spiral cords crossed by finer axial lirae; spire short, angular, shouldered; whorls not numerous, first convex, then angular, last whorl large; base with a keel around the umbilicus; mouth ear-shaped, angled above, beak-like below; columella smooth, concave, narrowed below. Type—*Turbo separatista* Dillwyn. (Africa). Widely distributed at moderate depths.

L. MERIDIONALIS Verco 1906. Turbinate, solid; three broad spiral bands on spire, four on body-whorl; a less marked peripheral keel forms the suture; crowded axial threads cross the keels; protoconch of $1\frac{1}{2}$ whorls, convex, smooth but for 4 equal lirae; whorls 5, rapidly increasing; base somewhat concave, lirate; outer lip corrugated; columella with tooth-like prominence below; umbilicus, a chink. Height 3.6 mm.; diam. 2.9 mm. Beachport, 40 fathoms.

L. GABRIELI Prit. & Gat., 1899. Pl. 2; fig. 8. Tubinately conical, thin; light brown, covered with a thin horn-coloured periostracum; sculpture of 3 spiral keels, the upper two close and situated at the angle of the whorl; protoconch of $1\frac{1}{2}$ smooth whorls; body whorl very much larger than the preceding one; $5\frac{1}{2}$ whorls





EXPLANATION OF PLATES.

PLATE I.

- Fig. 1. *Eutriphora cana* Verco.
- Fig. 2. *Eutriphora cana* Verco, protoconch.
- Fig. 3. *Isotriphora tasmanica* Ten Woods, protoconch.
- Fig. 4. *Isotriphora tasmanica* Ten. Woods, protoconch.
- Fig. 5. *Notosinister granifera* Brazier, protoconch.
- Fig. 6. *Notosinister granifera* Brazier.
- Fig. 7. *Teretriphora gemmegens* Verco, protoconch.
- Fig. 8. *Teretriphora gemmegens* Verco.
- Fig. 9. *Cautor obliqua* May.
- Fig. 10. *Cautor obliqua* May, protoconch.
- Fig. 11. *Hypotriphora subula* Verco.
- Fig. 12. *Hypotriphora subula* Verco, protoconch.
- Fig. 13. *Cautor maculosa* Hedley.
- Fig. 14. *Notosinister pfeifferi* Crosse & Fischer.
- Fig. 15. *Notosinister innotabilis* Hedley.
- Fig. 16. *Notosinister festiva* Adams.

PLATE II.

- Fig. 1. *Gazameda tasmanica* Reeve.
- Fig. 2. *Colpospira runcinata* Watson.
- Fig. 3. *Platycolpus quadrata* Donald.
- Fig. 4. *Stiracolpus iredalei* Finlay.
- Fig. 5. *Glyptozaria opulenta* Hedley.
- Fig. 6. *Caecum amputatum* Hedley.
- Fig. 7. *Strebloceras cygnicollis* Hedley.
- Fig. 8. *Lippistes gabrieli* Pritchard & Gatliff.
- Fig. 9. *Icuncula torcularies* Ten. Woods.
- Fig. 10. *Seguenzia polita* Verco.
- Fig. 11. *Vermicularia siphon* Lamarck.
- Fig. 12. *Lilax nucleogranosum* Verco.
- Fig. 13. *Siliquaria australis* Quoy & Gaimard.
- Fig. 14. *Siliquaria weldii* Ten. Woods.
- Fig. 15. *Magilina caperata* Tate & May.

in all; widely and deeply umbilicate; inner lip almost straight; slightly concave in the middle, outer lip semicircular, simple. Height 12 mm.; diam. 12 mm. Backstairs Passage, 16-18 fms.

ICUNCULA Iredale 1924. Screw shaped, shining, solid, prominently spirally keeled. Type.—*Lippistes torcularis* Ten-Woods.

I. TORCULARIS Ten-Woods 1877. (*Lippistes*). Pl. 2; fig. 9. Small, solid, pyramidal; sordid white, shining; prominent spiral keel on centre of each whorl which makes the shell appear like a small screw; base tricarinate; protoconch subvertical, smooth; adult whorls 4, elevated, acute; mouth rounded, entire, outside quadricostate. Height 3.5 mm.; diam. 1.5 mm. Beachport, Cape Borda down to 40 fathoms.

SEGUENZIA Jeffreys 1876. Conical, glossy, without periostracum; groove deep, large, on upper part of last whorls; columella abruptly notched below with tooth-like prominence. Distinguished by the broad sutural slit. Type—*S. formosa* Jeffreys. (Azores).

S. POLITA Verco 1906. Pl. 2; fig. 10. Small, solid, turbin-ate; white, glistening; central keel forms suture on body-whorl, two others below, smaller, then 6 concentric lirae to the umbilicus; protoconch, 1¼ whorls, smooth, round; adult whorls 6, stepped, flatly concave; mouth squarish, outer lip with sinus at the suture and a deep wide notch at base. Height 3.5 mm.; diam. 2.4mm. Cape Jaffa, 300 fathoms.

VERMETIDAE.

Tubular, attached or free, sometimes septate within; sometimes regularly spiral when young, always irregular in the adult; mouth rounded, usually entire, sometimes fissured; operculum horny, annular, sometimes spiral, rarely absent; attached to stones, shells or coral, or living in sponges, often gregarious in large colonies.

Distinguished from *Serpulidae* by the spiral nuclear shell and interior septa of the tube. *Serpulidae* tube is composed of two calcareous layers, that of *Vermetidae* of three. *Serpulae* are Annelids. Cosmopolitan. Fossil, Secondary, Tertiary.

VERMICULARIA Lam 1799 (*Thylacodes*). Adherent, irregularly twisted, with three to five longitudinal nodulous lirae which do not show internally; frequently partitioned perpendicularly to the axis, operculum minute or absent.

V. SIPIO Lam 1818 (*V. arenarius* Q. & G.). Pl. 2; fig. 11. Large, vermiform, sometimes in colonies; brownish, rugged growth lines crossed by unequal longitudinal necklace-like riblets which are predominant; whorls irregularly twisted; aperture subcircular; no operculum. Up to 4 inches overall, diam. of aperture about 7 mm. Common. Cast up on Beach.

V. FLAVA Verco 1907. Circular tube coiled in flat discs of 6 mm. diameter, each disc formed of 3 or 4 spirals; the discs are superimposed to form a cylinder; followed by a free tube of moderate length up to 15 mm. long; discs may be formed from the centre outwards, or from circumference inwards; sinuous growth lines; ochre-yellow, diameter of tube 1.5 mm., moderately thick. Cape Jaffa, 130 fathoms. Beachport, 40 fathoms.

V. HEDLEYI Finlay 1927. (*V. nodosa* Hedley 1907). Small, solid, coiled, adherent to a foreign body, except a third of the last whorl which is free and semi-erect; gray; radial ribs, thick, prominent, about 20 on the last whorl, which broaden to the periphery, narrow to the suture, interstices deeply excavated; whorls three, rapidly increasing; mouth circular, its lip constituted by the final rib. Major diam. 2.25 mm.; minor diam. 1.65 mm. Shell sand.

V. WAITEI Hedley 1903. Small, solitary, white; whorls 4, first three coiled in one plane, adherent, last free, spiral, suberect, square in section with a sharp elevated rib along each angle; aperture circular, trumpet mouthed; about 3.25 mm. long. Beachport to Cape Borda, 40 to 150 fathoms.

LILAX Finlay 1926. Protoconch nautiloid, translucent, covered with minute granules. Type—*Stephopoma nucleogranosum* Verco.

L. NUCLEOGRANOSUM Verco 1904 (*Stephopoma*). Pl. 2; fig. 12. Attached, solitary or conglomerate; translucent-white or tinged pinkish-chestnut; keel prominent, rounded; growth lines rugose, round, protoconch, nautiloid, $1\frac{1}{2}$ whorls, horn-coloured or white, translucent, effuse at its aperture, covered with minute granules. The shell springs from within the trumpet-shaped mouth which projects all round; adult whorls, $2\frac{1}{2}$ in same plane, attached, then 2 whorls coiled above and adhering to those below, followed by a free, twisted tube, up to an inch in length; aperture circular; operculum horny, multispiral. Coiled portion diam., about 6 mm. Backstairs Passage, 16 fathoms.

SILIQUARIA Bruguiere 1789. Tubular, at first spiral, then irregular, protracted; tube with a longitudinal fissure, simple or formed by a series of perforations, often both varieties exist in the same specimens; mouth circular, without internal septa; operculum horny, subcylindrical or conoidal, formed by a spirally rolled band, with ciliated margin. On rocks and corals, sometimes in sponges.

S. AUSTRALIS Q. & G. 1834. Pl. 2. Fig. 13. Moderately thick, vermiform; reddish-brown (beach specimens usually whitish); whorls about 5, irregularly coiled, angulated behind, growth lines marked; slit at first closed, then with open round holes, finally a denticulated open slit; interior nacreous, greenish. A large specimen, 4 inches over all. Diam. of aperture, 11 mm. Common, all beaches.

S. ANGUINA Linne 1758 (*Tenagodus*). Distinguished from *S. australis* by its scaly longitudinal ribs. Lives in blackish-purple sponge, which stains the shell violet. Diam. 3 mm. St. Francis Island, 35 fms.

S. WELDI Ten-Woods 1875 (*Tenagodus*). Pl. 2; Fig. 14. Thin, loosely coiled; white, yellowish or very light rose, shining, smooth; growth lines distinct, sigmoid on outer edge of tube; slit filled below in first 3 whorls, afterwards open, simple; whorls about 6, closely coiled together at apex, then rapidly unfolding. Up to 30 mm.; diam. of aperture, 4 mm. Common, all beaches.

MAGILINA Velain 1877. Nucleus free, spiral, of one whorl only; adult shell prolonged into a tube; irregularly coiled, attached to surface of submarine bodies.

M. CAPERATA Tate & May 1900 (*Thylacodes*). Pl. 2; Fig. 15. Agglomerate, reddish-brown; ridges, transverse, rounded, close set; coils cone-shaped, reciprocally adherent; free tubular portion narrowed, irregularly bent, aperture circular. Length of tube, 10 mm.; diam. base, 4 mm.; height cone, 2 mm.

M. DEPOSITA Hedley 1909. Small, irregularly coiled; ribs, radiate, coarse, irregular; protoconch of two whorls, followed by 3 or 4 loose prostrate coils, finally rising free and erect for a short length. Length of coil 4 mm.; breadth 2.5 mm.; diam of tube, 0.7 mm.

Nomenclatural Note.

by BERNARD C. COTTON.

In the Rec.S.Austr. Mus., iv, No. 3, 1931, p. 341, a new genus was introduced under the name *Neogaimardia*, which was preoccupied by Finlay. This genus is here re-named *Eugaimardia*.

SHELL COLLECTORS' CLUB.

During the past quarter, families *Triphoridae*, *Turritelidae*, *Vermetidae*, *Scalidae*, and *Gymatidae* have been reviewed, particulars of some of these families are dealt with under a separate authorship in this issue. In future, the Club will meet on the FIRST MONDAY of the month only, instead of fortnightly as previous. Less time will be devoted to those shells which are rare and not likely to be found on our local beaches. At the September meeting, *Cypracidae* (Cowries), and October, *Volutidae* (Volutes) are on the programme.